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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, TAM M

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,926

Applicant(s)

OVERBEEK ET AL

Examiner

Tam M. Nguyen

Art Unit

1784

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 7 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) 8-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4, 7 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Oath/Person's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9/22/03
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The rejection of claims 1-7 under 35 USC § 102(b) and 103(a) is withdrawn by the examiner in view of the amendment filed on October 22, 2003.

A new rejection follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action.

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Schwartz et al. (6,303,530).

Schwartz discloses a catalytic composition comprising zeolite. From Figure 1, it is estimated that the ratio of the total ammonia desorbed from the zeolite at a temperature higher than 300° C to the total ammonia being desorbed ammonia from the zeolite at a temperature below 300° C is greater than 1.2. (See Figure 1; col. 3, line 7 through col. 4, line 37; col. 5, lines 29-32; col. 8, line 20 through col. 9, line 20; col. 12, line 31 through col. 13, line 9)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 7, 25, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocal (4,746,763).

Kocal discloses a catalytic composition comprising zeolite (e.g., ZSM-5). From Figure 1, it is estimated that the ratio of the total ammonia desorbed from the zeolite at a temperature higher than 300° C to the total ammonia being desorbed from the zeolite at a temperature below 300° C is greater than 1.2. It is noted that Kocal does not specifically disclose the step of removing tetracylammonium templating agent at a temperature of no greater than 550° C.

However, the present claims are product-by-process claims. Hence, patentability is based on the product and does not depend on its method of production. (See the figure; col. 6, lines 23-48)

Kocal does not specifically disclose that the first catalyst is a ZSM-12 zeolite. However, Kocal discloses that the first discrete catalyst is a crystalline aluminosilicate of the ZSM variety including ZSM-12. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by using ZSM-12 because one of skill in the art would pick any ZSM zeolite from the list including ZSM-12.

Kocal does not disclose that the ZSM-12 is a TEA-ZSM-12. However, Kocal discloses that the ZSM type zeolites are prepared with a tetraalkylammonium compound. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by preparing the ZSM-12 with tetraethylammonium (TEA) because one of skill in the art would prepare the ZSM zeolite with any tetraalkylammonium including tetraethylammonium with the expectation that any alkyl group would give similar results. (See col. 9, lines 56 through col. 10, line 1).

It is noted that Figure 1 does not include ZSM-12. However, Kocal intends to employ a first discrete catalyst having a degree of acidity as described in Figure 1 (see col. 6, lines 23-48). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by using a ZSM-12 having an acidity activity as ZSM-5 (first discrete catalyst) because it is effective to use a first discrete catalyst having an acidity activity as ZSM-5.

Claim 4:

The zeolite has a ratio of silica to alumina of at least 12 (See col. 9, lines 56-60)

Claim 7:

Kocal does not specifically disclose that the molar ratio of silica to alumina is at least 15:1. However, Kocal discloses that the ratio of silica to alumina is at least 12:1. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by utilizing a zeolite having the ratio of silica to alumina of at least 15:1 because one of skill in the art would employ a zeolite having any ratio of silica to alumina which is greater than 12:1 including 15:1 in the process of Kocal.

Claim 27:

Kocal does not disclose that the zeolite is TEA-mordenite. However, Kocal discloses that other crystalline aluminosilicates such as mordenites (zeolite) can be use as a catalyst and discloses that catalyst is prepared with tetraalkylammonium (see col. 10, lines 1-5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by employing a TEA-mordenite as a catalyst because one of skill in the art would prepare the mordenite from any tetraalkylammonium including tetraethylammonium with the expectation that any alkyl group would give similar results.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocal (4,746,763) in view of Yao et al. (5,895,828).

Regarding claims 2 and 3, Kocal does not specifically disclose that the zeolite has an average pore diameter greater than 100 Angstroms and a pore volume greater than $0.7 \text{ cm}^3/\text{g}$. However, Yao discloses a zeolite having a pore volume in the range of from about 0.4 to about 0.8 ml/g ($1 \text{ ml/g} = 1 \text{ cm}^3/\text{g}$) and an average pore diameter in the range of from about 70 to 300

Angstroms (see Yao; col. 2, lines 38-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kocal by using a zeolite having an average pore diameter and pore volume as taught by Yao because such average pore diameter and pore volume are effective in a process of producing aromatic compounds from C₂-C₆ aliphatic hydrocarbon.

Response to Arguments

The argument that Kocal does not demonstrate enhanced catalytic performance when calcining the catalyst at a temperature up to 500° c to remove a tetraethylammonium templating agent is not persuasive because as discussed above, in a product-by-process claim, the patentability of a product does not depend on its method of production.

The argument that Kocal does not disclose that the catalyst is zeolite beta, TEA-mordenite or TEA-ZSM-12 which has an AAI of at least 1.2 is not persuasive because of the new rejections above.

The argument that Yao does not disclose the use of zeolite beta, TEA-mordenite, or TEA-ZSM-12 catalyst is not persuasive because the examiner modified the process of Kocal by using a zeolite having an average pore diameter and pore volume as taught by Yao because such average pore diameter and pore volume are effective in a process of producing aromatic compounds from C₂-C₆ aliphatic hydrocarbon.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen
Examiner
Art Unit 1764


Walter D. Griffin
Primary Examiner

TN